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Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

No. 269

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CONTENTS

WEST EUROPE

GOVERNMENT ADOPTS DECISIONS AFFECTING TELECOM POLICIES

Melbourne THE AGE in English 10 Feb 83 p 3

[Article by Michael Gordon]

[Text] The Federal Government has rejected radical changes to Telecom's pricing policies and committed itself to preserve and strengthen the position of Telecom and Australia Post.

The Government announced yesterday that it had rejected proposals for timed local calls and higher charges in country areas.

But it deferred a decision on the involvement of private enterprise in a wide range of Telecom areas.

The Minister for Communications, Mr Brown, said it would be months, "perhaps years" before the Government made its decision on private enterprise.

The main Telecom union said last night it was not satisfied that the Government was not planning to hand much Telecom work to the private sector and pledged to campaign against the Government in marginal seats, including Mr Brown's Victorian seat of Diamond Valley. The ALP needs a swing of 3.7 per cent to win the seat.

Among the areas still to be addressed by the Government are the role of the national satellite in carrying private telecommunications services, the scope for private involvement in the terminal market and the potential for competition in data services and long-distance traffic.

Although Mr Brown denied that "an essential underpinning" of the Davidson committee recommendations had been pulled away, his comments suggest the thrust of the committee's three-volume report has been rejected.

The committee's chairman, Mr J. A. Davidson, saw its 104 recommendations on the role of Telecom as a package which could not be accepted in part.

Mr Brown denied yesterday that the Federal election had prompted the decisions on the more controversial recommendations of the Davidson inquiry.

He said the Government believed a statement on the future of Telecom and Australia Post was necessary to "allay public concern" about the provision of postal and telecommunications services.

"Telecom and Australia Post are both great national institutions and should be preserved and not undermined", Mr Brown told a news conference in Melbourne.

Mr Brown said he "presumed" the Government would not make decisions on the Davidson recommendations to give Telecom more financial autonomy until the middle of the year at the earliest.

He said the Government would not make decisions on the large number of recommendations by the Davidson inquiry into Telecom and the Bradley inquiry into Australia Post "on the run".

Both inquiries were set up to examine the role of private enterprise in the provision of services as a result of the Razor Gang report on Commonwealth functions in 1981.

The main Government decisions announced yesterday are to:

- Commit the Government to maintain "the essential common carrier roles of Telecom and Australia Post".
- Reject the Davidson committee proposal to end the practice of cross subsidisation, which allows profitable Telecom areas to subsidise unprofitable areas and thus avoid higher charges in

more remote areas.

- Reject the Davidson recommendation that telephone rentals be fixed depending on the subscriber's distance from an exchange.
- Reject the Davidson proposal for timed local calls, which would have involved higher charges for local calls longer than three minutes.
- Accept the Bradley commmittee proposal that Australia Post's exclusive power to carry letters should continue.

Mr Brown said that when the Government looked at other recommendations of the two inquiries, it would consider the scope for Telecom and Australia Post "becoming involved in providing new and ancillary services".

While the Government's decisions were welcomed by Telecom, the Australian Telecommunications Employees' Association was not satisfied with Mr Brown's announcement.

The association's Federal secretary, Mr Bill Mansfield, said Mr Brown had avoided making an unequivocal commitment that Telecom would be able to continue to subsidise unprofitable areas. He described the decisions as a "gimmick".

CSO: 5500/7549

BRIEFS

SATELLITE CONTRACT--CANBERRA: The Federal Government has approved a Telecom contract worth almost $8 million to establish satellite-linked telephone services for subscribers in remote areas of Australia. The Communications Minister, Mr Brown, said that he had approved a contract with NEC Australia Pty Ltd for a telephone ground system. Telecom would use the Aussat domestic communications satellite. The NEC system would be one of the most advanced in the world and consist of a central control facility with 65 earth stations, providing a completely automatic telecommunications service. [Perth THE WEST AUSTRALIAN in English 10 Feb 83 p 1]

SUPPORT FOR DAVIDSON REPORT--The Australian Computer Equipment Suppliers' Association (ACESA) has declared its support for the main thrust of the recommendations in the Davidson Report on telecommunications. In response to the Government's invitation to comment on the Davidson findings, ACESA supports the early implementation of the recommendations with emphasis on the following: --The right of the private sector to have unrestricted freedom to use and resell leased Telecom lines on a non-discrimination basis. --Its right to operate independent networks and their inter-connections with the national public service network. --Its right to compete in the supply, installation and servicing of terminals. --Increased private sector involvement in writing and terminal maintenance activities. ACESA says that the Division report provides a firm basis for a more liberalised and responsive telecommunications environment. [Melbourne THE AGE in English 15 Feb 83 p 34]

CSO: 5500/7549

CABLE TO BOOST NEW ZEALAND LINKS

Aukland THE NEW ZEALAND HERALD in English 9 Mar 83 p 9

[Text] A vital telecommunications lifeline for New Zealand moves a step nearer to completion next week when the cable ship Mercury arrives in Auckland.

The Mercury is to lay the New Zealand to Norfolk Island segment of Anzcan, a $500 million submarine telephone cable which by the end of 1984 will link this country with Australia, Norfolk Island, Fiji, Hawaii and Canada.

Anzcan replaces the trans-pacific cable, Compac, which after 20 years' service is coming to the end of its economic life.

Compac entered service in the early 1960s when the volume of calls handled was relatively small. The demand has soared with a 24 per cent increase last year alone. Other international telecommunication services are also growing at a fast rate, and to cope with this heavy demand Anzcan has a capacity more than 20 times that of Compac.

The new cable is to take over Compac's role in the dual cable/satellite Pacific telephone service. Submarine cable and satellite facilities provide back-up for each other in the event of failure in either system, ensuring continuity and security of service.

The cable link plays a particularly important role. It provides long-term reliability--Anzcan has a life expectancy of up to 25 years--and also meets special communication needs such as high speed data transmission and providing extensions to places which would otherwise require two satellite hops.

New Zealand has a 14.5 per cent or $75 million interest in the installation.

The Royal New Zealand Navy hydrographic survey ship Monowai surveyed the route of the cable, almost 8200 nautical miles.

The first part of Anzcan to be laid was the segment starting from Port Alberni, Canada, which the cable ship, Cable Venture began in December last year.

In January the Mercury started laying the cable from Bondi Beach, Sydney, towards Norfolk Island.

The next segment to be laid, again by the Mercury, is from Takapuna Beach to Anson Bay, Norfolk Island.

CSO: 5500/4341

SHANGHAI SOLVING TELEPHONE SERVICE PROBLEMS

Beijing JINGJI GUANLI [ECONOMIC MANAGEMENT] in Chinese No 2, 1983 pp 21-22

[Article provided by the Policy Research Office of the Ministry of Posts and Telecommunications: "How Is Shanghai Solving Difficulties in Making Telephone Calls?"]

[Text] In 1982, the Shandhai City Telephone Bureau has combined its efforts with the reorganization of its enterprise, started out from the needs of users, grasped the difficult problem "of not being able to install more phones, not being able to make telephone calls readily," exerted efforts to improve efficiency in communications and economic benefits, promoted a change in the enterprise toward a "production management type" of enterprise, and realized welcome results. According to statistics, from January to September 1982 the telephone capacity increased by 6,000 phones, and the net increase in telephone users numbered 5,310 lines, nearly double thefigure in the same period in 1981. Moreover, the plan, called for by the higher authorities, to assign numbers for 5,000 lines during the whole year was completed 3 months ahead of schedule. The low rate of connections and the delayed dial tone were preliminarily improved. Because [the plan] insisted on assigning more numbers and issuing numbers and lines early, users benefited early and enterprises also realized gains early. From January to September 1982, the income of the municipal telephone business reached 34.3 million yuan, an increase of 7 percent over the same period last year. They did the following:

Clarified Guiding Ideology, and Selected Points Accurately for Reorgainzation and for Making Breakthroughs

Since the Third Plenum of the 11th Party Congress, telephone communications in Shanghai City have broekn through the situation of a long period of stagnation. In 3 years, the number of telephones increased by 26,000 and total equipment capacity increased by 23.7 percent over 1978. New phones were installed in over 16,000 households within the city limits, and the number of public telephones throughout the city increased to more than 2,800 booths. But the shortage of telephones in the city has still not been eased. The conflict of "not being able to install telephones and not being able to make telephone calls readily" is still very outstanding. Eacy year, over 10,000 applications for telephone installation are submitted,

but most of them cannot be satisfied, and the waiting list has reached more than 26,000 applicants. Because the amount of telephone messages has gradually increased year by year, the connection rate has long remained at about 50 percent. When a line is busy, the duration of the dial tone reaches 120 seconds. Users have complained a lot about this.

The Shanghai City Telephone Bureau is a fairly good enterprise of the Shanghai Posts and Telecommunications Department. For several years it has undergone several reorganizations, but the results have not been great. In 1982, they analyzed previous reorganizations with the hlep of an on-site inspection group from the Shanghai Municipal Posts and Telecommunications Administrative Bureau. They realized that in reorganizing enterprises, they must start out from the needs of the users. Improvements in the efficiency of communications and economic benefits were consistently being made. Only by increasing communications capabilities, improving service, improving the quality of communications, and adapting to social needs will the state realize more revenue, will the enterprises retain more, and will the workers receive more. They decided to solve the difficulties of "not being able to install telephones and not being able to make telephone calls readily" as a breakthrough in overall reorganization. They organized an investigative team consisting of members of the Municipal Posts and Telecommunications Administrative Bureau, the Municipal Telephone Bureau, and the Municipal Telephone Substation. They selected the Taixing Road Telephone Substation, which has the longest waiting list, as the test point. The situation was quickly opened up.

Changing the Method of "Determining Sales by Production" to "Determining Production According to Need"

The first problem encountered by the investigative team in its investigation of the Taixing Road Substation was, on the one hand, that progress was slow because of the limitations imposed by civil engineering construction and by the laying of cables to increase the city's telephones. On the other hand, the telephone equipment that had been newly placed in service could not fully produce any benefits. This substation newly installed 4,000 units of the crossbar telephone exchange system in 1981, but telephones still could not be installed for the substation's entire 1,687 applicants. The reasons were mainly that telephone lines were not matched, the laying of phone lines could not catch up, and installed phones did not have the capability of communication. They organized the planning and design departments, construction departments, business departments, line-dispatching departments, and phone number issuing departments; brought the date of the phone lines and applicants for telephone installation to the site; drew up a "density map [showing] applicants' line shortage"; and investigated and analyzed every neighborhood and every phone cable. They discovered that the question was that the phone line design department did not completely grasp the information regarding the applicants, and that it did not understand the need for telephones in the "market." The line-supply department did not organize design and construction according to the needs of users but designed lines according to ordinary technical standards. As a result, there were insufficient lines and few lines in areas where the population of applicants was dense, while areas with an abundance of lines had only a few applicants.

Confronting this situation, the investigative team felt that for municipal telephone developments new line-distribution arrangements should be made. Line distribution to areas with a dense population of applicants must be implemented first and quickly, and progress in design and construction should be hastened. At the end of September 1982, the Taixing Road Substation had already added 1,103 numbers and lines for users and had solved the problem for 65 percent of the applicants of the entier substation. At the same time, the Taixing Road Substation also surveyed all busy users who make over 600 calls a month and the 156 public phones of the whole substation. Wherever lines were available, it took the initiative to install external lines or trunk lines for users. In this way, the rate of unconnected telephone calls dropped visibly, and the rate of connected telephone calls increased. In 1981, the rate of connected calls for this substation was only 45 percent. In the first half of 1982, the rate was 54 percent. During the third quarter, it reached 59 percent. The experience of the Taixing Road Substation was popularized among the 17 branch organizations of the municipal telephone bureau. Progress in adding new telephone numbers and lines greatly quickened. In particular, the results at the six substations which are currently expanding the number of their phones were more apparent.

Reforms in the Management System and the System

To shift the municipal telephone enterprise toward "determining production according to need," we must carry out corresponding reforms in the internal management system of the enterprise, in production organization, and in the business management system. The Shanghai Municipal Telephone Bureau carried out the following three reorganization tasks:

One was to reorganize and perfect the internal economic responsibility system of the enterprise, focusing on improvements in the efficiency of communications and economic benefits. In the past, this bureau issued only technical quality indices to the substations. Goals for additional numbers and lines and indices of business revenue were uniformly managed by the bureau. Therefore, the substations frequently were afraid to change the rate of connection and were not enthusiastic about adding numbers and lines. In 1982, the higher authorities revised the method of examining the municipal telephone bureau. The efficiency of communications and economic gains were comprehensively examined and graded by points. They also established additional indices for issuing more user numbers and lines, installing more public phones, and adding and opening up more long municipal relay lines; for income and expenditure coefficients; for average per capita workload; and for interest on funds. The municipal telephone bureau divided the work according to duties, issued these goals separately to each department and office, implemented a system of contracts and guaranteed responsibility; then the departments and offices further separated each concrete goal into individual goals as performance goals in job evaluation. In this way, the enthusiasm of each substation in issuing numbers and putting through calls by busy users was greatly mobilized.

The second [task] was to reform the management system for the development of networks according to need in the development of the city's phones. The development of the city's telephone network includes 12 links and involves 9 departments and offices. In the past, a strong, forceful commanding and dispatching agency was lacking. After reorganization, they decided to join all the links and develop the network into "one connected sequence." The newly established department of telephone network development was taken as the "head," so as to uniformly coordinate the forces. Originally, when a user applied for installation of a telephone, the business office had to issue a ticket, the communications department then assigned a line, and the substation issued a number. Management was scattered. There were multiple commands. There were frequent disputes over trifles. This affected efficiency, while there was nobody in charge of business forecasting and line distribution plans. The reorganization linked the seven steps involved in issuing numbers into "one sequence" for uniform command, and established a business forecasting group to strengthen information management.

The third [reorganization task] was that a time limit was set for installation and full service. In the past, when telephones and line equipment were basically complete, a user would have to wait 59 days from the time the application was submitted to the time the telephone was installed. It took 30 days to move one telephone. Now, they have simplified handling, improved work efficiency, and established a maximum time limit for the installation and moving of telephones. They stipulated that when the telephone and line equipment are basically complete, the time from submission of an application to installation of the telephone should not exceed 30 days. The entire time required to move a telephone should not exceed 14 days.

9296
CSO: 5500/4131

BRIEFS

NEW TELECOMMUNICATIONS SYSTEM--Shijiazhuang, April 20 (XINHUA)--China's first pulse code modulation (PCM) multiplex telecommunications system has passed tests, according to the Ministry of Electronics Industry. The new facility in Shijiazhuang, built with domestically made equipment, has 480 channels, capable of transmitting at high speed coded telephone speech, facsimile, telegraph, data and TV pictures. [Text] [OW201028 Beijing XINHUA in English 0819 GMT 20 Apr 83]

NANJING MICROWAVE EQUIPMENT--The Nanjing Radio Plant, the Nos. 1014 and 1425 Research Institutes and a number of local electronic enterprises in Jiangsu have successfully trial produced all solid state microwave relay equipment for radio and television stations. The newly produced really equipment is of 8000 MHX and has been inspected by the Ministry of Electronics Industry, the Ministry of Radio and Television and the Jiangsu Provincial Scientific and Technical Commission. They have recommended that the new equipment be popularized because of its strong reliability, electrical use efficiency and its compact size. [Beijing XINHUA DOMESTIC SERVICE in Chinese 0010 GMT 26 Feb 83 OW]

CSO: 5500/4144

SELA COMMITTEE ON NEWS AGENCY MEETS

PA260039 Panama City LA PRENSA in Spanish 23 Mar 83 p 8A

[Text] On opening the third ordinary meeting of the Sela Action Committee for Alasei [Agencia Latinoamericana de Servicios Especiales de Informacion], Panamanian Vice President Jorge E. Illueca indicated that "there is no doubt that the establishment of Alasei is an effective step in structuring, at the international level, essential aspects of the new regional information order that, with due respect for the sovereignty of nations and the people's right to genuine and truthful social communication, seeks a just equilibrium in the exchange of information from both the qualitative viewpoint." [as published]

The opening session began with a welcoming speech by Boris Moreno Contreras, chairman of the committee. He was followed by Committee Secretary German Carnero Roque, who presented a detailed report on the Sela Action Committee for the creation of Alasei. He stressed "the clear effort of the developing countries, especially the nonaligned countries, to establish a new international order in information and communication."

Jorge Illueca emphasized the project, which originated in UNESCO and which is being implemented by the Sela Action Committee, comprising Costa Rica, Cuba, Grenada, Guyana, Haiti, Mexico, Nicaragua, Venezuela and Panama, whose representatives are participating in this third meeting.

Observers from Bolivia, Colombia, Ecuador, the Dominican Republic and representatives of Sela and of the UN's development program, among others, are participating in the action committee's sessions, which will end on 25 March.

The background of the creation of Alasei includes the historic conference on communication policies for Latin America and the Caribbean, sponsored by UNESCO in San Jose, Costa Rica in 1976; and the establishment of the Sela Action Committee for the sole purpose of creating Alasei. The Action Committee was established in Panama in May 1981.

Alasei has been conceived as an agency that will be based on the efforts of the countries and peoples of Latin America and the Caribbean, without acting as the agency of any particular government or social group. This is the reason for the pluralistic aspect of its directive bodies, Action Committee Secretary Carnero Roque added.

The Sela Action Committee on Alasei has tentatively scheduled a new meeting in July, so the agency might be legally established in October 1983.

CSO: 5500/2053

BRIEFS

TELEPHONE SERVICE ADVANCES--ALL the 2,000 telephone subscribers in the St. Augustine ar a will be able to dial overseas, directly, from Friday April 29. On that day, according to yesterday's announcement by the Trinidad and Tobago Telephone Company's Public Relations Manager, Mr. Neil Guiseppi, new electronic "collection terminals" will be 'put into operation in St. Augustine as a part of a recently-installed computerised billing system (C.B.S.) located in the network's nerve centre in the Nelson Exchange in Port-of-Spain. According to Mr. Guiseppi, the collection terminals will make detailed billing possible, whereby subscribers will be given numbers called and durations of calls when these are made overseas. The St. Augustine exchange is one of the older, step-by-step exchanges and when calls are placed within Trinidad, small, simple metres, one per line, are activated. These provide what is known as "bulk billing", and are unable to provide the details that are a necessity when international direct dialling is introduced. Sophisticated metering is part of the package of new electronic and digital exchanges, but not of the older step-by-step units which require separate equipment as is now being installed in St. Augustine. Information details gathered by the collection terminals will be fed automatically into the central recording controller in the Nelson Exchange. This consists of a series of magnetic tape recording systems that back-up each other to ensure accuracy and full-time operations. Mr. Guiseppi added that other older exchanges were programmed to be brought into the C.B.S. system, bringing I.D.D.D. to several areas in the coming months. [Port-of-Spain TRINIDAD GUARDIAN in English 29 Mar 83 p 3]

CSO: 5500/7550

REGIONAL BROADCAST STATION FOR UPPER EGYPT

Cairo AL-AHRAM in Arabic 24 Feb 83 p 11

[Article: "Northern Upper Egypt Station Begins 17 March; Will Cover Asyut, al-Minya, Bani Suwayf and al-Fayyum Governorates"]

[Text] On 17 March, Safwat al-Sharif, Minister of State for Information, will inaugurate the northern Upper Egypt station, the fourth local station after al-Iskandariyah, Greater Cairo and the Central Delta. Its transmissions will cover four governorates: Asyut, al-Minya, Bani Suwayf and al-Fayyum and will be located in the area next to the University of al-Minya.

According to the minister of information, the northern Upper Egypt station is one factor in the comprehensive development in the four governorates and will play an important role in generating progress in life there, in eliminating problems which obstruct development and increased productivity and in revealing the potential of the citizens of these governorates. Husayn 'Annan, head of the Broadcasting and Television Federation, gives a full picture of the achievements involved in this station from the standpoint of broadcasts, modern equipment required and programs to be broadcast throughout its time on the air.

Fahmi 'Umar, head of broadcasting, is paying particular attention to this station as the first to be constructed in Upper Egypt, giving the people direct services whether in their villages, towns or governorate seats. Accordingly, it was necessary to pick the broadcasters and persons producing and preparing the programs from the people of the four governorates as the primary sources for this station, in that respect the Koranic readers, singers, educators and talented people were invited by the station to come to present their productions and creations so that they could reach the people over this station.

The northern Upper Egypt station will concentrate on development programs in an attempt to regulate relations between the generations and pay attention to family development and programs on youth and childrearing. There will also be an opportunity for programs on increasing production in line with the government's policy and programs serving the agricultural and industrial sectors will be broadcast. Mustafa 'Ayd has been picked as the director of the northern Upper Egypt station. He is a broadcaster who has been involved

in various broadcasting work, preparing, presenting and producing various programs, services, shows, special programs and writing and reading news bulletins. The new station will have 40 employees in its first stage, 25 of whom will be program broadcasters and producers and 15 news writers, technicians and engineers.

8389
CSO: 5500/4608

BRIEFS

SUPARCO ESTABLISHES GEOMAGNETIC OBSERVATORY--A highly sophisticated Automatic Geomagnetic Observatory capable of recording the absolute values of various components of the earth's magnetic field has been established by Pakistan Space & Upper Atmosphere Research Commission (SUPARCO). The observatory known as AMOS III consists of two fluxgate magnetometers, one proton precession magnetometer, a system controller, a 9 track magnetic tape-recorder and an analog chart recorder. One of the fluxgate magnetometers gives the X (North), Y (East), Z (Vertical) components whereas the other one gives D (Declination), H (Horizontal) Z(Vertical) with an accuracy of gamma. The proton precession magnetometer gives the total field with an accuracy of 1/10th of gamma. SUPARCO plans to issue a regular monthly bulletin of mean hourly values of geomagnetic parameters along with times of occurrence of special event such as SSC (Sudden commencement of magnetic storms), SI (Sudden Impulses) etc., to interested organisations. [Karachi MORNING NEWS in English 5 Apr 83 p 3]

CSO: 5500/4736

BRIEFS

VILLAGE RADIO STATIONS--Eighteen village radio stations will go into operation in the northern province of Cabo Delgado before the end of this year. The radio stations are run by villagers and use cassette recorders, film projectors, amplifiers and loudspeakers to inform, educate and entertain the people. Two other village radio stations have recently gone into operation in the Mozambican province, one in a village for people who fled to Tanzania during the period of Portuguese colonialism. The announcers are given a special course before taking up their duties. [Text] [MB160646 Maputo in English to Southern Africa 1800 GMT 15 Apr 83]

CSO: 5500/134

BRIEFS

TRANSMITTERS FOR ANAMBRA--Two new medium wave transmitters have been acquired for the Anambra State Broadcasting Corporation (ABC) by the state government. They are of 10KVA capacity each and are to replace the former transmitters which were destroyed by unknown arsonists last December. [Text] [Kano SUNDAY TRIUMPH in English 13 Feb 83 p 12]

CSO: 5500/113

TECHNOLOGY TRANSFER OF INFORMATION SCIENCE DEVELOPMENTS EXAMINED

Johannesburg SOUTH AFRICAN JOURNAL OF SCIENCE Vol 79 Feb 83 pp 57-61

[Article by: R. van Houten: "Technology Transfer, with Special Reference to Scientific and Technical Information Services and Developments in Information Technology"]

[Text]

Introduction

Few will argue against the need for industrial growth for economic prosperity and social peace and the benefit of applying new (i.e. new to the industry concerned but already existing elsewhere) technology to ensure such growth.[1] Although the term 'technology transfer' seems self-explanatory, it has acquired somewhat differing meanings over the years. This is unfortunate because it has resulted in having become another fashionable catch-phrase with such terms as 'scientific management', 'information explosion', 'innovation' and 'ecological crisis', creating the impression of being a new phenomenon when, in fact, there is nothing new under the sun.

In industrialized countries, technology transfer originally meant 'optimization of the commercial value of innovation based on scientific technology: how to move research results from the laboratory or inventions from the test-bench to the market-place most efficiently in the least time, with due regard for quality'.[2] Hence Maddock sees technology transfer as an important function of R & D.[3] However, against the background of providing assistance to developing countries, technology transfer has been defined by one author as 'a process in which a country is free to choose autonomously, from among different alternatives of scientific and technological knowledge, those which are best suited to its natural conditions and to its development objective, its capacity for assimilation and its patterns of living'.[4] This definition already contains elements implying that factors other than scientific and technological knowledge affect the success of technology transfer.

To add to the confusion, a distinction is sometimes made between, on the one hand, 'vertical technology transfer', involving a creative idea, R & D and engineering, leading to a product or process (some would refer to this as 'technological innovation' in the narrow sense), and on the other hand, 'horizontal technology transfer', involving application, marketing and diffusion (i.e. 'technological innovation' in the wider sense, including diffusion between different industrial sectors).[5] In an attempt to overcome these problems of definitions, Richardson mentions 'integrated' technology transfer, 'connoting, perhaps too simply, that the transfer of basic scientific knowledge and technical know-how involves a combination of the learning-to-know process with that of learning-to-do'.[2]

For the purpose of this paper, technology transfer is regarded in its widest sense, with the accent mainly on the transfer of technology already available and applied elsewhere and somewhat less on the first applications of scientific research results.

Means for technology transfer

Many means exist for the transfer of technology already available and applied elsewhere. These include: information provided by suppliers of production equipment, information contained in specifications for sub-contractors, new technological content in the merchandise itself, buying of know-how (licensing), buying of (poaching on) expertise available elsewhere, specialist experts leaving big firms to start their own businesses, information obtained from consultants, information obtained from R & D organizations, technological institutes, advisory services, information obtained from the literature, either directly or through information services, etc., and information obtained at conferences, etc.

In the long run the planned upgrading of skill levels of personnel and internal R & D can make important contributions to the assimilation of technology transferred by these means. However, in commenting on the lack of effectiveness of some R & D institutions in developing countries, Desa stresses the need for adequate 'delivery systems' to transfer the results to industry.[6] De Bettignies, when discussing 'each decade's catch phrases serving to crystallize its problems as well as to attract specialists to international conferences', emphasizes that 'technology transfer is in no way a new phenomenon and, if today we talk more of North-South transfer, technology transfer played a major role in East-West transactions in the past'. It was from China to Europe that critically important technologies were transferred such as those identified by Nicolas Jequier.[7] The principal transfer agents are quoted as being 'Arabs, Turks, Portuguese, merchants and travellers, Pax Mongolica, the Crusades'. When dealing with subsequent major transfers from developed to less developed countries, Jequier quotes as principal transfer agents 'pharmaceutical companies, US Army, World Health Organization, technical assistance missions, electronic firms, national governments'. These examples of past and present are illustrative of the variety of means for transferring available technology.

The role of information services

It will be clear that the formal transfer of information through (scientific and technical) information services is but one of the means for transferring technology. The concept of information service, advisory service, etc. is a manifestation within a continuous spectrum, where many intermediate forms and combinations appear.

Manifestations	*Activity*
Archive	Document storing
Library	↓
Special library	↓
Documentation service	↓
Information service	Information interpretation
Information analysis service	↓
Extension service	↓
Consultation service	↓
Advisory service	(Hands-on) advising

[illegible] interpretation of information in terms of user needs — a kind of evaluation and repackaging function. An information service (or organization) can make use of all possible sources of data, as many such services do [illegible] documentary information.[8]

For the purpose of this paper, attention will be confined to scientific and technical information services that rely mainly on documentary information. Examples are those connected to large national and industrial R & D establishments. A typical scientific and technical information service of this type would provide conventional or computerized literature current awareness and retrospective searching services to alert a user to relevant literature, as well as document delivery services to provide the user with wanted documents, as shown below.

Typical scientific and technical information service activities

- literature alerting
  - broad current awareness service (e.g. to groups of users)
  - specialized selective dissemination of information (e.g. to individual scientists, engineers, managers)
  - retrospective searching (in-depth searches, quick reference, enquiries)
- document delivery
  - acquisition
  - indexing, cataloguing, classification
  - lending, photocopying
- interpretation of information (analysis and evaluation of documentary information in terms of user needs)
- accessing of specialized databases (bibliographical and factual, both external and in-house)
- extension (field liaison)

Where scientific and technical information services such as those attached to national R & D establishments also provide information services directly to industry (instead of indirectly through the research establishments they serve), it is not uncommon to find extension (field liaison) services.[8]

The importance of extension services was recognized at an early stage. In The Netherlands for instance, the Rijksnijverheidsdienst has, since 1911, established a field liaison service patterned after the agricultural extension services. Likewise, the Canadian Technical Information Service and the Danish Technical Information Service long ago initiated field liaison services to liaise between industry on the one hand and national R & D establishments, technological institutes, etc. on the other hand. Several such services exist in Asia and Latin America. Even for highly developed industrial nations, extension services, albeit at higher level, are advocated. Gartner and Naiman advocate a Technical Extension Service for the USA, to 'coordinate technology transfer as a special management group'. It would be staffed by the 'pack rat', 'champion', 'bridge scientist', or any 'individual capable of providing the brokerage activities required for transferring technology'.[9]

The importance of direct personal contact is reflected in the results of a West German pilot project (1977 - 81), in terms of which technical consultation services were established according to geographical region (e.g. affiliated to chambers of industry or commerce), sector of industry (e.g. metalworking industry), and technological subject (e.g. micro-electronics).[10] The French national scientific and technical information network is also being organized by region and industrial sector.

Organizations in South Africa involved with technology transfer

"If we consider those organizations in the Republic that are involved with the collection, storage, repackaging and dissemination of scientific and technical (documented) information in support of technology transfer, it is appropriate to give some attention to local bodies concerned[4] with technology transfer as such. Hodgson lists these as research institutes, universities and technikons, professional and technological institutions and government sponsored bodies primarily concerned with technology transfer, the Steel and Engineering Industries Federation of South Africa (SEIFSA) and various associates such as the South African Copper Development Association, concerned with the effective usage of and related matters with regard to certain materials.[5]

After considering the strong and weak points of these agencies, Hodgson recommends that a technology policy be formulated, important elements of which should be

- positive measures to ensure adequate facilities for vocational education and training,
- measures to actively stimulate research and development in industry in key areas, and
- adequate measures to facilitate technology transfer with strong financial backing by government.

He also advocates the creation of an association 'to facilitate collaboration between the technological institutions serving the metalworking industry on matters of common interest', as well as the location of the proposed Materials Handling Research Centre and the relocation of the CSIR's Production Engineering Advisory Service, at an industrial park, 'to establish closer contact between universities, technikons and South African industry and to afford the opportunity for engineering students specializing in manufacturing technology to obtain hands-on experience in this field.'[6]

It is worthwhile to examine the role of research and development establishments in some detail. Maddock sees the main function of an R & D establishment as being a link in the innovation chain to enable the innovation flow to occur more efficiently. He defines the role of an R & D establishment as follows. First, it should be in close contact with relevant advanced science and technology. Second, it should provide an opportunity to bring relevant but different disciplines together. Third, it should apply science and technology at the lowest cost in time and effort. Fourth, and most important, it should be active in technology transfer and should therefore preferably be located close to the users of its R & D work. Fifth, it should be able to assess objectively the feasibility of an innovation project.[7]

In discussing technology assessment in Japan and its relation to R & D, Eto and Ishida stress the importance of what they call 'orgware' 'organizing, for exploitation by the community, existing technologies and basic research capabilities by resorting to political means'. The development of orgware is accompanied, perforce, by cultural, socio-economic and administrative reform. Cultural innovation implies scientific novelty, realized by the reorientation of fundamental research — quite different from the traditional free research of the *laissez faire* type.'[8]

It is important to note the difference between company or corporate R & D establishments in industry and cooperative or national (or provincial) research institutes. Whereas the former have a major commitment to industrial innovation in general, and new product or process development in particular, the latter tend to pay more attention to process improvement and to research aimed at improving the technological infrastructure.[9] R & D establishments are an important channel for disseminating scientific and technical information in support of technology transfer. However, whereas R & D establishments in industry deal more with information of a proprietary nature which can be regarded as a tradeable commodity, national research institutes are more involved with information of an open (e.g. published) nature, which can be regarded as a freely available resource.

Organizations in South Africa involved with scientific and technical information

In a 1975 survey of the provision of scientific and technical information to industry, 370 questionnaires were sent to suppliers and users of information, of this number, 70% were returned.[10] The suppliers were placed in the following categories: industrial organizations having their own R & D establishments, technical planning bodies, chambers of industry, trading associations, homeland governments, universities, libraries, technikons, state departments, statutory bodies, development corporations, the most important local technical journals. Although various

dated, an important finding was that the following sources of scientific and technical information are of importance to industry, listed below in order of stated priority:

- technical publications in English,
- suppliers of production equipment,
- associated firms,*
- research organizations and universities,
- libraries of research bodies and universities.

*Especially important in South Africa where many firms are subsidiaries of overseas companies.

Although libraries were rated low, technical publications were rated highly in this 1975 survey. It is important to note that at the time, local information documentation services providing subscribers with references to the published technical journal literature, had not yet made a great impact.

At present the largest single scientific and technical information service (concentrating on documentary information) is the Centre for Scientific and Technical Information (CSTI) of the CSIR. In addition there are several in-house technical libraries and information services at large industrial organizations (ISCOR, AECI and a few others). Several universities are, to an increasing extent, providing library and information services to industry.

The CSTI provides a weekly literature current awareness service in the broad field of manufacturing technology, to some 1 200 industrial subscribers. A computerized literature awareness service for the selective dissemination of information (SDI service), aimed at individual scientists and engineers, now handles some 2 200 'interest profiles', of which about 1 300 are for profiles of scientists and engineers in industry. Both services started in 1973. A service for online retrospective literature searches was started in 1976. At present such searches are undertaken at the rate of about 2 700 per year, of which more than half are for industry. In view of the importance of direct liaison with industry (this aspect was stressed earlier), CSTI field liaison staff, operating from offices in Pretoria, Bellville, Port Elizabeth and Durban, and recently also Johannesburg, are paying liaison visits to industrial firms at the rate of more than 700 visits per year.

These information services, which alert the customer to literature of potential interest, have resulted in a much greater use being made of the CSTI Library (and of other libraries), to provide the documents wanted by the customer. Although these services act in support of technology transfer, many case studies have been collected to prove that quite often technology transfer takes place directly from the literature.

Developments in information technology

Perhaps the most important recent developments in documentary information services have been the advent of computerized selective dissemination of information services and, more important, the subsequent online information revolution, not only affecting bibliographic information, but also resulting in a rapid increase in the availability of factual or numerical data bases in the fields of science and technology. These factual data bases have not yet made a great impact in South Africa. It is expected, though, that factual data base searches will eventually become much more numerous than bibliographic searches.

Although about twelve organizations in South Africa are now conducting online bibliographical searches, mainly on overseas data bases (together they conducted an estimated 12 000 searches in 1981), a bottleneck for many years has been the high cost of using the appropriate lines for access to the data bases abroad. It is expected that, once this country has access to international packet-switched data networks, these costs will be reduced substantially and that the number of searches will increase quite dramatically.

The concept of online document ordering followed on the heels of online searches of bibliographic data bases. Should a customer have been alerted, during an online search, to a document of potential interest to him, then, instead of obtaining the document through the inter-library network, he can, through the [illegible] which the search is done, instruct the compiler of [illegible] data base [illegible] to send a copy of the document with [illegible] to him. Although more expensive, experience has shown that in many cases the document can be obtained faster than through library channels.

As far as information technology is concerned, the most important developments, from an information handling point of view, are:

- the use of videodiscs for information retrieval purposes
- the introduction of teletex
- the introduction of videotex
- the improvements in facsimile
- in more general terms, faster and/or cheaper and/or smaller computer systems
- better and/or cheaper communication facilities.

Modern videodisc technology, especially the digital optical recording systems, offers scope for cheap mass storage.[19] Each disc can store the equivalent of half a million typed A4 pages. A rapid access storage system with 50 discs has a storage capacity of 25 million pages. In combination with high-speed scanning/printing equipment, it is possible to scan full journal article texts for recording on videodiscs, [illegible] selected texts subsequently from the discs and provide high-quality hard copies. Consortia of leading scientific, technical and medical journal publishers are now planning electronic document delivery systems. Basically, such a system involves:

- scanning [illegible] and recording of full texts on master videodiscs
- sending regularly updated copies of these discs to so-called [illegible] in various parts of the world
- retrieving selected texts, wanted by customers, from the discs at these centres
- making hard copies and sending to customer.

It is thought that such document delivery systems, although more expensive, in many cases will be faster than providing copies through library channels. Such systems will probably be operational by the mid-eighties.[20]

A teletex service is planned by the South African Post Office for introduction around 1984. It will be faster than, and will ultimately replace, the telex network. The teletex terminals can also be used as computer terminals and as stand-alone text/word processors. This system will provide faster traffic and may therefore improve inter-library lending. It is not suitable for graphics.

After an early upsurge in the fifties there was, until fairly recently, not much development of facsimile equipment. With faster and cheaper telecommunication channels, now available, this situation is changing and there is renewed interest in facsimile systems. New developments include the facility to transmit colours. This latest equipment may become of interest to libraries and information services for the faster transmission of documents requested by customers.

The [illegible] of videotex systems for information services in support of technology transfer are not yet clear. The South African Post Office is investigating the local introduction of such a system under the name of Beltel, based on the British Prestel system, by the mid-eighties. The South African Beltel service will also provide a facility, identical to the so-called Gateway feature of the Prestel system, which in principle will enable subscribers, whether in the office or at home, to use their TV sets with associated keyboards as computer terminals for direct access to all manner of data bases other than the Beltel data base. In principle, therefore, subscribers would be able to conduct online literature searches or searches of factual data bases, via their own TV sets. In practice, considerable [illegible] different data base and network access protocols, which require the customer to know the [illegible] of data bases in addition to being familiar with [illegible].

In the USA and the UK experiments have been carried out to determine the usefulness of videotex services for public and academic libraries. An experiment in Finland, to find out how useful the experimental Finnish videotex service would be for disseminating scientific and technical information, has been rather inconclusive.[21] It would appear that, for the time being, videotex systems will be used mainly for entertainment, transport timetables, stock exchange and related financial information.

Computers which get ever cheaper and smaller and telecommunication facilities which get faster and less costly, text processing and other office automation, as well as the increasing convergence of the computer and telecommunication industries into what is now known as the telematics industry, together seem destined to result in distributed data base networks with data bases located at 'centres of excellence' and accessible, via 'hardware telecommunication' networks (such as SAPONET) and the superimposed 'software application' networks (such as airways reservation, bank cheque clearing, library cataloguing networks), from a large variety of terminals and computers in a multitude of locations.

Impact of information technology developments

Although conferences are regularly held and review articles are published on the impact of new developments in information technology on the collection, storage and dissemination of scientific and technical (and other) information, the pace of developments as well as their directions are such that any forecasts quickly become outdated and accurate forecasts are impossible. In

general it can be said that these developments will, in the foreseeable future, result in [illegible] and [illegible] for

- alerting customers to potentially relevant scientific and technical information as well as factual data,
- identifying the documents containing such information and/or data,
- delivering copies of these documents on demand to the customer.

From a technology transfer point of view we can say that, with increasing sophistication and experience of individual industrial firms with internal information handling (including mangement information, in-house libraries and information services), more and more companies will be able to access *external* information sources and adapt such information for their own use. However, it is also likely that, for a long time to come, most small firms, both in the developed sector of this country's economy as well as in the less developed areas, will not be able to make full use of external sources of scientific and technical information, in support of technology transfer, without assistance in the form of extension services and/or other forms of personal contact.

Broad conclusions

The transfer of technology from developed to developing areas is a complex socio-cultural issue. According to Marton, industrialization in developed countries is a matter of (private) entrepreneurship; in developing countries it may involve government intervention.[17] For industrialized countries, Ramo advocates: 'In industrial technological innovation the government can help most not by launching more programs, which will mainly take needed capital out of the private sector, but rather by cutting inflation and improving the general economy so the private sector will have the means and incentives to perform more R & D of its own choice'.[18] From the foregoing one could infer that in South(ern) Africa, with its dualistic economy, different courses of action are required.

The subject of this article, as reflected in its title, is so wide that a detailed enumeration of recommendations is not possible. However, I shall conclude with a series of statements and questions which should be faced by those concerned with providing information services in the future.

- Different attitudes (among all or most sections of the population) towards work, technology and loyalty to employing organizations, are required. What can be done at primary and secondary school level to change these attitudes?
- It is said that high-risk financing for new (in the local context) technological applications is often a greater impediment to technology transfer than lack of available scientific and technical information. The development corporations are supposed to provide such financing. Is there scope for improvement? Would the recently announced government incentives for regional development materially assist with transfer of technology to less developed areas?[19]
- Much has been said in the past about a closer interplay between industry, (national) R & D establishments, universities and technikons. Could a Technological Institute (as proposed by Hodgson) help in this connection?
- Zegveld has doubts about the so-called 'technology transfer centres' at technical universities because they are technology-orientated although technology is but a small facet of the industrial innovation problem.[20] What lesson can South Africa learn if similar technology transfer centres are contemplated locally?
- Although an industrial extension service already exists in this country (the CSIR's Technical Information Service), it still has not reached the less developed areas. Would there be scope for expanding this extension network through the various development corporations? If so, how could this be done?
- The recently announced decentralization incentives include the benefit that fees paid by industrial firms to consultants can be deducted for income tax purposes. What implications does this have for R & D organizations in general and extension and advisory services in particular?
- It has been said that, using the number of Nobel prizes as an indicator, the UK is more inventive than Japan but that, nevertheless, Japan is more innovative than the UK. This is partly ascribed to the well developed practice of small Japanese firms subcontracting to large firms.[21] It would appear that a healthy climate of trust between firms and their subcontractors does not yet exist in the Republic. What can be done to improve this climate, thereby promoting technology transfer to small firms?
- The shortage of graduate engineers and high-level technicians in this country, and the prevailing public image of engineers (linked to 'engine' in Britain but to 'ingenuity' on the Continent) are regarded as factors militating against technology transfer. Apart from the need to attract other race groups to the engineering profession, why has this profession not attracted more females? Can anything be done about this?
- Although scientific and technical information services have already established extension (field liaison) services to promote the flow of (documentary) information to industry, and while courses for industrial information workers are held, and even though these information services, libraries and publishers are giving attention to better and faster literature alerting and document delivery services, there is a feeling that more could be done. What?

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This article was prepared for the National Conference on Research and Development, held at the CSIR Conference Centre, Pretoria, in July 1982

CSO: 5500/129

BRIEFS

FOURTH-GENERATION GENERATOR--PRODUCTIVITY increases of up to 600% are being achieved by companies using a new fourth-generation programme generator being marketed by a Durban-based software supplier, Programit. The generator, known as Speed II, is one of the first products in the new software technology which is expected to free the bottleneck on programmer preparation which is causing serious problems in the data-processing (DP) industry. "Prices of hardware are coming down at the rate of 20% a year, resulting in suppliers having to sell more machines to stay in the same place," say Ed Brady, national sales manager of GBS Wang, which supplies the machines on which the new package is run. "And, with more users in the marketplace, there is an increasing demand for more applications. The DP man is caught in the middle with severe shortages of skilled people to prepare programs, with the result that there is a two-to-three-year backlog on applications. "In addition, between 50% and 80% of the average DP manager's skilled staff are engaged on maintaining existing programmes, including updating." With Speed II not only can programmers do their work much faster but non-DP people can use the product for simple tasks such as report preparation. [Text] [Johannesburg SUNDAY TIMES-BUSINESS TIMES in English 27 Mar 83 p 5]

CSO: 5500/127

BULGARIAN COMPUTER TRAINING ASSISTANCE REPORTED

Harare THE HERALD in English 28 Mar 83 p 3

[Text] The Zimbabwe Government will soon establish computer science departments in its training colleges, the Deputy Minister of Manpower Planning and Development, Cde Jane Ngwenya, said on Friday.

Speaking at Harare Airport soon after the arrival of a four-tonne computer centre from Bulgaria, she said the equipment would augment "the limited and often stretched computer resources at hand".

The primary objective of her ministry was to develop skills in the computer field and to supply those computer centres already suffering from serious shortages of computer personnel at all levels with skilled cadres.

The acquisition of the computer centre would not lead to duplication because the Government's long-term desire was to reduce the country's dependence on expatriate computer personnel.

"Our people should eventually be able to develop their own software through local innovation."

Since independence, she said, Zimbabwe had embarked on a massive programme of manpower development and training in all sectors of its economy.

"We firmly believe that in order for us to realise the Government's objectives to achieve self-sustained growth and economic independence in the shortest possible time, there is a great need to build a strong technological base. This can be achieved if we have the requisite technological skills."

Cde Ngwenya told the Bulgarian Ambassador to Zimbabwe, Cde Christo Kolev, who was also at the airport, that Zimbabwe welcomed the gift of the computer and the provision of experts to assist in its installation and technical maintenance.

"We would like to see the computer centre training operators, programmers, systems analysts and engineers. We hope to achieve this by setting up computer science departments in some of our colleges.

"We greatly appreciate the efforts of your country in helping us to be self-sufficient in this important aspect of human resources development and utilisation," she told the envoy.

On the plane which brought the computer were blankets, typewriters, furniture and motorcycles for the Zimbabwe Congress of Trade Unions from the Bulgarian professional unions.

A representative of the ZCTU, who was at the airport said the equipment was for the movement's training centre in Chitungwiza.

Cde Kolev said he was happy that the computer centre, which had been promised the Prime Minister, Cde Mugave, by the Bulgarian President, Cde Todor Zhivkov, in November 1981, had finally arrived.

CSO: 5500/128

NORWAY, SWEDEN SIGN TELE-X AGREEMENT; FINLAND MAY JOIN LATER

Oslo AFTENPOSTEN in Norwegian 7 Apr 83 p 15

[Article by Morten Fyhn]

[Text] Stockholm, 6 Apr--After a lengthy and at times dramatic dispute over financing, the Tele-X agreement is at last ready to be signed. This opens up the possibility of two new TV channels, but there will probably also be long and hard discussions about what they should be used for.

The telecommunications satellite, Tele-X, is primarily a Swedish project and 80 percent of the financing comes from Sweden. Norway will pay 15 percent of the total costs, which will run to 1.25 billion kroner figured in January 1982 terms.

The industrial affairs ministers of Norway and Sweden will sign the agreement in Stockholm on Monday. Negotiations between Finland and Sweden have not yet been concluded, but the two sides are expected to reach agreement without any special problems. The Finnish share will be around 5 percent.

On Thursday the Swedish government will formally approve the agreement that will insure Norway a reasonable share of industrial contracts in connection with development of the satellite.

Tele-X can convey information between computer terminals, text and pictures can be sent via satellite so that such things as newspaper pages can be transmitted, video services can be offered and Tele-X can be used for remote instruction purposes. The Swedish industrial affairs minister estimates that the money invested can be recouped by selling different kinds of services.

It is planned that Tele-X will be launched in December 1986. In the beginning, the two TV channels will be used for trial broadcasts and it will probably take a long time before any decision is made as to which programs will be transmitted. This in turn will have a lot to do with the results of the discussions on the far more extensive Nordsat project, which is purely a TV and radio satellite.

"Even if Finland decides not to be part of the Tele-X project, Norway will sign the agreement with Sweden on Monday," said the leader of the Norwegian negotiations delegation, negotiating director Odd Gothe, in a statement to the NTB news agency.

"Both Norway and Sweden would prefer to have Finland participate. But a rejection on the part of Finland would not upset the project," said Gothe.

6578
CSO: 5500/2663

FUNDS SHORTAGE CONCERNS OFFICIALS AS 'SIMULTANEOUS' TV STARTS

Godthaab GRŒNLANDSPOSTEN in Danish 16 Mar 83 p 32

[Text] Lack of personnel and shortage of funds have been the two biggest problems that KNR has had since the introduction of 'simultaneous' TV, the chief of Kalaallit Nunaata Radioa, Peter Frederik Rosing, says in this interview.

"Already at the time when the provincial council decided on centralization of TV in Greenland, we got a loan of 4 million kroner from the fund of the Danish Broadcasting Corporation."

At that time, it was clear that the funds could not be used for very much. They were to be used for distribution and copying of tapes. And copying machines alone cost 500,000 kroner each.

However, that was not the way things went.

In the late seventies it was discovered that the reserve channel of the Greenland Telecommunications Service to the UHF (ultra high frequencies) chain might be used for the transmission of TV signals. And the decision was made. Greenland was to transmit 'simultaneous' TV to the towns that already had access to the UHF chain.

Progress

At the very time that KNR was about to purchase the expensive machinery, better and less costly equipment began appearing on the market. New equipment for TV broadcasting had emerged. It, moreover, cost only one-fifth of the equipment they originally had had in mind. After thinking things over for a short period of time, they purchased it.

"In that way, we suddenly got funds at our disposal," the chief of the broadcasting company says. "We were now able to afford converting the concert hall of the Broadcasting House into a TV studio. We were able to afford purchasing color TV cameras, text machines, etc. But we also found out that we had a far too small staff. According to the former system solution, we had employed an operator, a service technician, and a clerk. Now that we not only had a studio but also were able to broadcast our programs to sixteen different towns and settlements, we realized that we needed additional technicians.

However, KNR was able to solve part of this problem itself. The company trained three of its own sound technicians as TV operators. It also appointed a journalist to edit and direct the programming and planning of its TV broadcasts.

Adequate Machinery, Zero Staff

[Question] KNR aims at producing as many TV programs in Greenlandish as possible. What are your possibilities in that respect?

[Answer] We can make TV programs ourselves. The problem is that our staff is not large enough. And, moreover, we have got only one production plant. The shortage of staff, of course, puts a limit to production capacity. If we had a couple of additional technicians, they could attend to the transmission of the very evening TV programs. The three other technicians could then be in charge of the production. As you will know, we have only three TV technicians today to attend to the recording, the editing and the transmission of programs, respectively. That is why the production time becomes considerably shortened.

Peter Frederik Rosing says that the goal set by the Radio Council is impracticable. (The goal is an 80 percent coverage with programs in Greenlandish exclusively.) Especially now that there is a shortage of both personnel and funds. For the company is not even able to cope with the task of converting Danish-language programs into the Greenlandish.

Actually, there are various ways in which this problem may be solved. A specific program may, for example, be broadcast on two evenings in succession, one evening in Danish and the following evening in Greenlandish. Or two channels might be used--which the reserve channel, moreover, makes possible. However, all of this is not feasible. The company is unable to obtain qualified personnel on account of its shortage of funds.

For the information of our readers, it is pointed out that KNR has received a total of 23.7 million kroner this year, and that is for both radio and TV operation.

Agreements

[Question] How is the cooperation with the individual TV societies?

[Answer] We have entered into agreements with FTV [expansion unknown]. They transmit TV programs which they themselves have produced. We, actually, have entered into two different agreements. One is to the effect that we from KNR may order TV broadcasts which they have the possibility of producing. Here, our idea of the cost is 50 kroner per minute. We will not be paying all of their costs, and it must be regarded as an encouragement for them to make these programs for us.

The other agreement is to the effect that the various TV societies send copies of their local broadcasts to us. At this end, we may edit them together and

transmit them jointly. In that way, people will be able to see what is going on in the outside world. We do not pay for these recordings--the payment will be that as many people as possible will be able to view them.

There is, of course, a limit to the number of TV societies of the sixteen receiving stations that will be able to make TV programs of their own. Actually, only four or five of the local TV societies are able to do so. And, of course, these are the local societies in the major towns of Nuuk, Qaqortoq, Sisimiut and Illulissat. On the other hand, they have gained experience, and they have better equipment than most TV societies. At any rate, KNR will be turning to good account the programs sent to Nuuk by the various TV societies.

[Question] KNR thus intends to safeguard the spirit of Greenlandization?

[Answer] Undoubtedly! Some people will ask why it then is a Dane who is in charge of the operation. (N.B. This was written prior to the appointment of a Greenlandish-language program controller; editors.) There is a simple reason for this. At the time that we advertised the position, not a single bilingual applicant responded. That is why we agreed to have him be in charge of the operation. At the same time, he will be training the journalists who, it is hoped, will be working with TV. We have recently got a new staff member who is bilingual. He will be setting things going, but we expect a lot of the journalist apprentices who will have completed their training in the course of the spring.

At the moment, there are fourteen bilingual journalist apprentices. Five of these apprentices will have completed their training in the spring.

7262
CSO: 55[illegible]/2655

BUNDESPOST TO TRY GLASS FIBER TRANSMISSIONS

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 6 Apr 83 p 34

[Article by Hans Zettler: "Video-Conferences, TV Transmissions via Glass Fiber"]

[Text] "The future belongs to the glass fiber." Communications experts working on the expansion of the telephone network do not doubt it for a moment. This was made clear at a recent Darmstadt forum on the Bigfon project—the broadband, integrated glass fiber local telephone system—sponsored by the Association of German Postal Engineers. As it happens, there is a great deal to be gained from transmitting information by means of light signals. The hair-thin glass fibers, which transmit the light, have a very high transmission capability. They are immune to electromagnetic disturbance and "overlap" from one telephone conversation to another does not occur either.

Light Transmission All the Way to the Customer

Even today it would be economically feasible to connect different telephone exchanges which transmit numerous calls with each other by means of glass fiber cables. The distance beyond which the signals must be regenerated again is substantially greater than in the case of copper cables. After conducting initial tests in Berlin, the Bundespost put a 15.4 kilometer glass fiber cable into operation between Frankfurt-Ginnheim and Oberursel in 1979. Since then, other connections of this kind have been established between other exchanges. Future plans are to use glass fiber cables for long distance lines, too, if the need arises.

Project Bigfon, for its part, calls for leading the glass fiber cable from the exchange all the way to the customer's home telephone. But if only some individual home telephones were involved, this would be a rather uneconomical way of going about things. On the one hand, the real capacity of these expensive fibers would only be miniminally utilized and on the other hand, it would take some rather expensive adapters to transform the optical signals into electrical signals and vice versa at the home end. But a glass fiber system such as this would also make it possible to exchange high capability broadband signals. This would not only make it possible to introduce videophones but also to provide high-quality radio and television broadcasts. In contrast to cable television networks which, like gas and water mains, branch out in the manner of a tree and therefore admit of transmission in one direction only, the Bigfon network is star-shaped. The lines connecting the individual customers radiate out from a central exchange which is capable of establishing a connection to any of the participating customers.

While the cable television subscriber may choose from a variety of programs at home at a given time, Bigfon would have him call the central exchange which would then transmit only those programs to him that he had actually asked for. Depending on the number of sets in a particular household, there would only be a need for transmitting two or three programs at any one time. Still, the supply of programs may be as big as one likes, since the central exchange would have the capability of making not only the network fare available but also a large library of videotapes and records. Such a system would also make it possible to expand videotext capability substantially. Due to the limited capabilities of present telephone lines, it is now merely possible to transmit texts and rather large-size graphics. Glass fiber technology, on the other hand, would make it equally possible to transmit color images of TV quality and even film clips. This would be of interest for example to travel agencies, movie houses and other businesses which could do their advertising in this manner.

According to A Naab, an official of the ministry for post and telecommunications, the Bigfon project is above all responsive to the needs of the individual consumer affording him the opportunity of being connected to one and all via the central exchange rather than merely supplying him with radio and television broadcasts. This is why the star-shaped arrangement makes so much sense in that it ties together all the "services" presently being rendered by telephone lines and the integrated data network. The latter includes in addition to telephones, telefaxes and videotexts the transmission of data and textual material via telex and office telex machines. New services in addition to these include broadband individual communication (videophones) and broadband mass communication (TV and radio). Modular construction of technical equipment is to provide the individual user with the opportunity of availing himself of only some of the services and of expanding his communication potential later by adding whatever modules he may require.

Videophones are likely to be initially limited to business use. By conducting video-conferences, it will be possible to cut down on travel funds. Major use of videophones in the home will come later, A Naab believes.

Large Investments

Experts estimate it would cost DM 300 billion for the FRG to change over to glass fiber entirely. At the Darmstadt symposium it was said that the investments for such a project would stretch out over 30 to 40 years—which, incidentally, is the time frame within which the existing telephone system would have to be rejuvenated anyway. Given a total of 30 million telephone outlets, this job would call for expenditures amounting to DM 180 billion. Bigfon would cost another DM 120 billion but would offer a great deal more in terms of transmission capability.

In 1980, the Bundespost asked six German electronics firms to set up an initial 10 Bigfon experimental systems. Three of these were installed in Berlin, two in Hanover and one each in Hamburg, Duesseldorf, Stuttgart, Nuremberg and Munich. Service was connected to a total of 320 homes (28 and/or 48 connections to each system). 68 of these are to be equipped with videophone units. The first glass fiber cables were laid in the fall of 1982. The central exchanges are to be set up this summer; the home units will follow in the fall and experimental transmission—which is to continue until late 1986—will begin in December.

In order to make long distance calls by videophone possible, seven groups of homes involving 46 customers overall throughout the FRG will be connected via glass fiber cable. The first such link is being constructed between Hamburg and Hanover. According to N Gawron of the Darmstadt telephone research center, all these "islands" will be linked up during the course of the experimental phase—with the three Berlin groups of homes involving 22 users leading the way by early next year. But for the time being, linking Berlin up with the rest of the FRG is not possible due to a lack of transmission capability.

Major Experiment in Biarritz

The videophone experiments are technical tests and not tests to determine viability in everyday use. The number of customers is far too small for that at present. "Who among the few users knows any of the rest ?" was a justified question put by P Mueller-Roemer, the technical director of the Bavarian radio network. Whether this new service will gain acceptance will therefore not really come out until videophones are more generally used. French postal authorities have taken another tack. They are going to equip 1,500 homes in Biarritz with videophones—which, given the relatively large number of sets should provide more information on practical use than the Bigfon test.

In setting up the 10 experimental systems, the firms were given a great deal of latitude. Accordingly, the various systems came out different, as N Gawron pointed out in a talk he gave at the symposium. This is evidenced both by the number of telephone channels operating at 64,000 pulses per second (up to 30 per connection) and the number of stereo radio broadcasts transmitted (between 4 and 32) as well as the number of television channels (two to four). All the firms except one decided on digital TV signals—but since no norms have yet been established, the systems in part differ in the manner in which signals are transformed from analog to digital.

The signals of the different services are combined in so-called multiplexers and then transmitted as a uniform sequence of pulses. At the user end, a demultiplexer then divides the signals once again and transmits them to the individual units. In most experimental systems, the user is connected to the central exchange by means of two glass fibers—one for each transmission channel. At a later stage, N Gawron said, only one fiber will suffice. This will become feasible when each channel will use a different light wave frequency.

The firms have certainly been able to gain some experience as they worked out their plans for the experimental systems. But at the same time it is fair to ask what purpose is really served by the experiments. Even before the tests are to get under way, the Bundespost, according to A Naab, intends "to establish the parameters for setting up the definitive Bigfon system given a positive decision on glass fibers for local systems by late 1983." In other words, test results will not even be taken into account. And yet, industry needs to obtain timely marching orders in order to start the time-consuming and costly development of components such as microchips for signal processing.

But aside from the debate about the technical aspects of the Bigfon project, it has also become a media-political issue. The introduction of a program exchange, the networks feel, will have an adverse effect on their prerogatives. P Mueller-Roemer put it this way: From the media-political point of view, he said, there is a vast difference between having everyone receive his programs directly and his having to go through an intermediary to obtain them. The transmission of television programs, as envisaged by the Bigfon system, calls for a far larger technical apparatus than the present system of direct distribution. But program reception should not be made more expensive by incurring additional costs for distribution by cable. Thus, he said, the question is whether it is economically justifiable to add to the present inexpensive wireless distribution of programs by existing networks and broadcast satellites yet to be built (i.e. a total of 7 TV and 21 stereo channels on radio) by establishing a second cable distribution system the cost of which no one can as yet guess at--particularly as far as a glass fiber network is concerned.

Controversial Merger

In Mueller-Roemer's view, there are no convincing grounds for combining two diverse ventures such as individual and mass communications. In the subsequent debate, W Gawron pointed out that the Bundespost is charged with providing the least expensive transmission of signals possible. This is all the easier to achieve, if one employs as few specialized systems for individual services as possible. In other words, it would be best to merge.

The media-political debate becomes even more troublesome in view of the fact that not only the prerogatives of the federal government but also those of the Laender are affected. It would be sad indeed, if yesterday's media legislation which had no way of anticipating tomorrow's technologies was to obstruct the establishment of a modern communication network and to have an adverse effect on the competitive position of the electronics industry in an field of great importance for the future.

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AGENCY REPORT ON TELE-X FAILS TO WEIGH KEY ASPECTS

Helsinki HUFVUDSTADSBLADET in Swedish 11 Mar 83 p 4

[Editorial by Inger Jagerhorn: "Tele-X, Much Ado About Nothing?"]

> [Text] The Postal and Telegraphic Agency's negative stand on the Tele-X satellite shows that there is more behind this than a question of a technical means of communication. In reality Finland is already committed to participate in a European satellite project. In the long run, P&T [Postal and Telegraphic Agency] can get the investment in receiver equipment back from the viewers. P&T has no Nordic industrial policy or cultural policy aspects in Tele-X, Inger Jagerhorn states.

In view of the scope of the discussion being waged about Tele-X in relation to the resources to be invested, one might ask if this is not much ado about nothing.

But the very fact that the discussion is making such high waves and that the reactions are so strong allows us to suspect that there is something much more behind the problem as stated than a simple question of which technical aid should be used to convey Nordic TV broadcasts and various kinds of computer communication.

Thus let us concede that the satellite question does not involve just a technical communications tool. It involves monopolization, jobs and competition, all things that get people worked up.

The Trade and Industrial Affairs Ministry, which prepared Tele-X for the decision-maker, the government, probably realized that and tried to reduce the question to an industrial policy and technological project.

But that did not work with the Postal and Telegraphic Agency, which rejected the idea of Tele-X in a critical statement.

As we know, Tele-X is a Swedish experimental satellite. It has a lifetime of 5 to 7 years and after that time it will be worn out. It has 6 or 7

channels, two of which can be used for TV broadcasting. The idea is that Sweden will take one of the TV channels, leaving the other for division between Finnish and Norwegian interests. Norway has made carrying out the Nordsat project a condition for its participation in Tele-X.

As time went by, the concept of Nordsat has changed. Denmark has withdrawn from the original all-Nordic satellite. If Nordsat is carried out, the costs will be determined in relation to the gross national product of participating countries. The administration of Nordsat would be Nordic, not Swedish. It would be a permanent satellite system with a main satellite and reserve satellites, with new launchings about every 7 years.

It is impossible to carry out such an expensive project without some experiments. Tele-X can therefore be regarded as a preliminary study for Nordsat. This is also where industrial hopes lie.

The Postal and Telegraphic Agency's statement should be seen in light of the fact that it has already committed Finland in practice to participation in another satellite project, the European Telecommunications Union satellite, ECS, which will be launched in May. Finland will have no broadcast channels in this system, while Norway will have one channel on an occasional basis. Instead of the public broadcasting monopoly, there will be an army of (commercial) customers jostling for channel space. The telecommunications agencies of participating countries will be leasing out the channels assigned to them in European negotiations to these commercial customers. The broadcasts will not be state radio broadcasts, but will go only to paying recipients.

The fact that protests from the Finnish broadcasting system concerning Tele-X are now relatively feeble, while protests from the Postal and Telegraphic Agency are very strong can be viewed against this background. P&T has no interest in supporting increased opportunities to broadcast Finnish radio and TV programs or to receive Nordic programs. They will make an investment in receiver equipment, an investment that will eventually be paid for by user fees. P&T, however, feels that Nordic communications cooperation will compete with European cooperation--although it is not quite clear why. They also say it will be expensive to build receiving facilities for Tele-X unless there is an intention of continuing in Nordsat and that Tele-X is therefore a stand to be taken on state broadcasting activity via Nordsat. But it also turns out that ECS involvement is intermittant and the same opposing arguments should apply to that. In both cases, continuation following the experiments is likely. Why else are experiments conducted?

It may be true that data communication in the Nordic region would be more expensive via satellite than via ground networks today. But has P&T counted on the enormous expansion of the need for data transmissions? And has it thought of the regional significance satellite reception would mean compared to a ground network that favors population centers?

There is not much in the Postal and Telegraphic Agency's statements on Tele-X that takes into account industrial policy, cultural or Nordic cooperation aspects. That is honest, at any rate.

6578
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TELECONFERENCE SERVICE STARTED BY TELECOMMUNICATIONS AGENCY

Oslo AFTENPOSTEN in Norwegian 7 Apr 83 p 35

[Text] "Personally I think this service will appear very quickly in many places and the development will probably have an impact on transportation companies and the hotel branch," said Transport and Communications Minister Inger Koppernaes Wednesday when she dedicated the first teleconference link between Oslo and Trondheim. The opening took the form of a conversation between the cabinet minister in front of TV cameras in Oslo and the general director of the Telecommunications Agency, Kjell Holler, in a studio in Trondheim, followed by a press conference with sound and moving pictures between the two cities. For the time being, this involves a trial service that will form the basis for the later decision as to whether to introduce this as a regular service.

The Telecommunications Agency has not yet decided whether the trial arrangement will be expanded to include more locations. The reason it was decided to start with Oslo and Trondheim was that this was the simplest distance to cover. The transmissions take 960 telephone channels, but they use the reserve capacity in the network connections between Oslo and Trondheim so that this does not affect the regular telephone traffic.

General director Holler stressed teleconferences as an efficient alternative to trips and overnight stays and he said that an hour in the television studio would often cover the needs of a meeting. It is true that such conferences cannot entirely replace personal contacts, but they will be an efficient solution when time, travel and overnight expenses are major factors, he said. This new teleservice will be directed primarily toward the firms, public departments and organizations that have offices or contacts in both Oslo and Trondheim. Firms in Stavanger have also expressed interest in similar opportunities, but no decision has been made yet as to whether to provide the service.

Cabinet minister Koppernaes praised the Telecommunications Agency for having acted quickly on this matter. Since a decision was made in June 1981 to introduce teleconference trials between Oslo and Trondheim, less than 2 years have gone by.

"Even for a media development that is going so quickly, this is impressive," said Koppernaes. She stressed that the new services the Telecommunications Agency has come up with do not take funds away from the expansion of telephone services.

A teleconference lasting 30 minutes costs 1,250 kroner for the organizers, an hour costs 2,000 kroner and the price of each additional quarter of an hour is 400 kroner. Until the end of August, however, the Telecommunications Agency is offering an introductory price at 50 percent off. The studios are located on Kongens Gate in Oslo and on Nordre Gate in Trondheim and the equipment is very well-arranged and easy to use. Three cameras cover all the participants in the conference and there is also a document camera for transmission of text, pictures and illustrations. There is room for five conference participants in each studio, in addition to people attending the conference who can follow it on a separate TV screen. There is also Telefax equipment and telephones equipped with loudspeakers in each studio.

The Telecommunications Agency's investment in this trial service runs to 1.5 million kroner. It is estimated that companies and institutions such as Siemens and the Norwegian Shippin Research Institute, which have local branches in both cities, will be interested in using the new teleservice and the Norwegian Technical College, for example, could use it in contacts with the Telecommunications Agency's research institute. But it will probably not be until the biggest companies get their own studios that interest in using this service will really take off.

There is nothing to prevent setting up teleconferences with other countries. With a link from the studio on Kongens Gate up to Tryvannstarnet, contact can be established with Sweden and the contact can be extended to the continent via the Swedish telecommunications system.

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